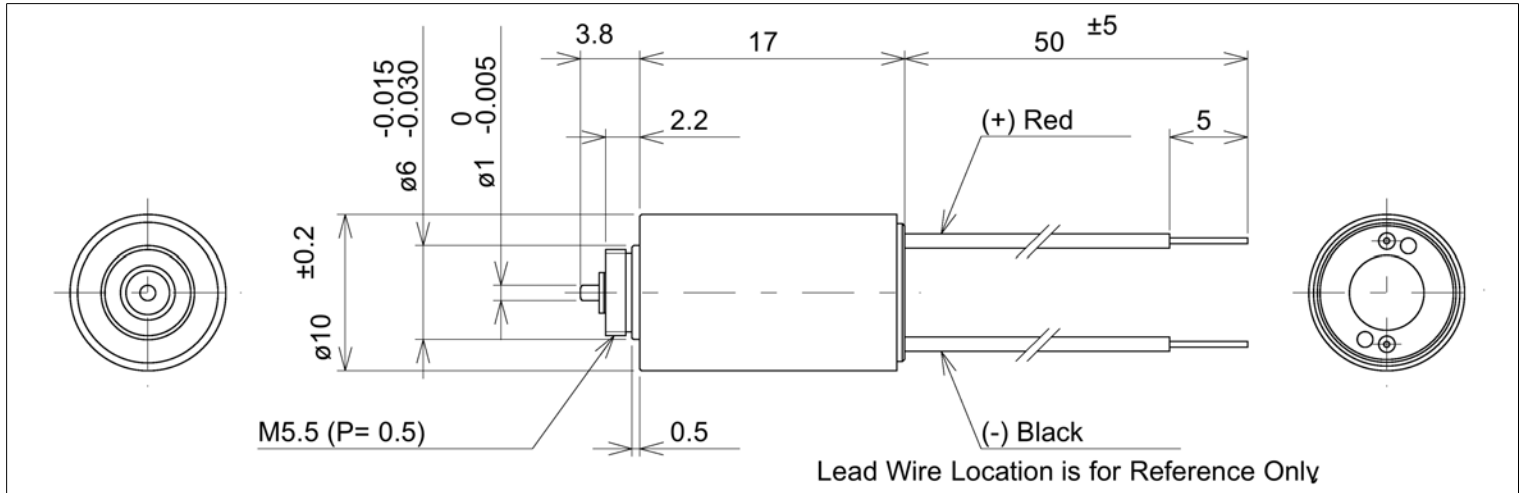


# Coreless DC Motor - 10 mm Ø x 17

C10P02SV000 0.25 Watts Peak Power



Global Motion Products



Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	2.4 Volts	2.4 Volts	2.4 Volts
No-Load Speed	10,650 rpm	10,650 rpm	10,650 rpm
Stall Torque	1.0 mNm	10.0 gcm	0.14 oz-in
No-Load Current	0.027 Amps	0.027 Amps	0.027 Amps
Peak Output Power	0.25 Watts	0.25 Watts	0.25 Watts

Torque Constant	2.03 mNm/A	20.70 gcm/A	0.29 oz-in/A
Terminal Resistance	5.11 Ohms	5.11 Ohms	5.11 Ohms
Back-EMF Constant	0.21 V/krpm	0.21 V/krpm	0.21 V/krpm
Inductance	0.100 mH	0.100 mH	0.100 mH
Rotor Inertia	0.069 kg-m <sup>2</sup> x10 <sup>-7</sup>	0.069 gm cm <sup>2</sup>	0.010 x10 <sup>-4</sup> oz in sec <sup>2</sup>

Mechanical Time Constant	8.6 msec	8.6 msec	8.6 msec
Slope of Speed/Torque Curve	11,171.5 rpm/mNm	1,065.0 rpm/gcm	78,888.2 rpm/oz-in
Speed Constant	4,705 rpm/Volt	4,705 rpm/Volt	4,705 rpm/Volt
Motor Constant	0.90 mNm/√Watt	9.16 gcm/√Watt	0.13 oz-in/√Watt

Ratings below are at 60°C. At room temperature the ratings would be considerably higher.

Rated Power @ 8,750 rpm	0.28 Watts	0.28 Watts	0.28 Watts
Rated Torque @ 8,750 rpm	0.9 mNm	9.2 gcm	0.13 oz-in
Rated Current @ 8,750 rpm	0.470 Amps	0.470 Amps	0.470 Amps
Part Number: How to Order	C10P02SV000	Characteristics - Specifications at	22 °C

Radial Load Rating	Radial Play	Max Temperature	65 °C
Radial Load Distance	Thrust Play ≤ 0.300 mm	Min Temperature	-10 °C
Axial Load	Magnet Type NdFeB	Max Winding Temp	120 °C
Press Fit Force - Max	Bearing Type Sleeve Bearings	Mass	7.4 grams
Gearbox Options	10 mm Diameter Exact Ratio Metal Planetary Gearbox		
Encoder Options	Integrated 3 to 24 Volt 10 mm diameter 2 channel 10 mA incremental 12 lines/track encoder		
Options - Other	2.4 Volt to 6 Volt windings. Wire leads and connectors.		

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 http://www.gmpwebsite.com Email: info@gmpwebsite.com

Commutation Type: Manufactured under a  
 Precious Metal Certified ISO 9001:2008  
 Quality System

RoHS Compliant

A - January 2012

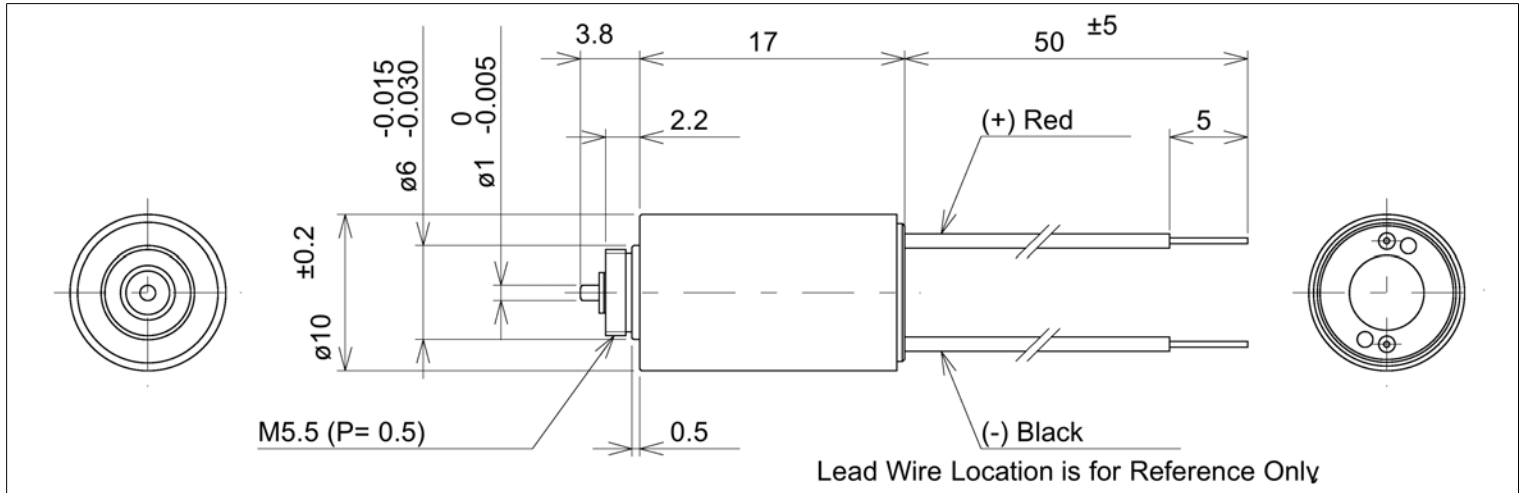
Specifications Subject to change without

# Coreless DC Motor - 10 mm Ø x 17

C10P03SV000 0.25 Watts Peak Power



Global Motion Products



Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	3.0 Volts	3.0 Volts	3.0 Volts
No-Load Speed	10,350 rpm	10,350 rpm	10,350 rpm
Stall Torque	1.0 mNm	10.0 gcm	0.14 oz-in
No-Load Current	0.020 Amps	0.020 Amps	0.020 Amps
Peak Output Power	0.25 Watts	0.25 Watts	0.25 Watts

Torque Constant	2.62 mNm/A	26.71 gcm/A	0.37 oz-in/A
Terminal Resistance	8.05 Ohms	8.05 Ohms	8.05 Ohms
Back-EMF Constant	0.27 V/krpm	0.27 V/krpm	0.27 V/krpm
Inductance	0.100 mH	0.100 mH	0.100 mH
Rotor Inertia	0.071 kg-m <sup>2</sup> x10 <sup>-7</sup>	0.071 gm cm <sup>2</sup>	0.010 x10 <sup>-4</sup> oz in sec <sup>2</sup>

Mechanical Time Constant	8.3 msec	8.3 msec	8.3 msec
Slope of Speed/Torque Curve	10,602.7 rpm/mNm	1,035.0 rpm/gcm	74,871.8 rpm/oz-in
Speed Constant	3,646 rpm/Volt	3,646 rpm/Volt	3,646 rpm/Volt
Motor Constant	0.92 mNm/√Watt	9.41 gcm/√Watt	0.13 oz-in/√Watt

Ratings below are at 60°C. At room temperature the ratings would be considerably higher.

Rated Power @ 8,450 rpm	0.28 Watts	0.28 Watts	0.28 Watts
Rated Torque @ 8,450 rpm	0.9 mNm	9.6 gcm	0.13 oz-in
Rated Current @ 8,450 rpm	0.380 Amps	0.380 Amps	0.380 Amps

Part Number: How to Order C10P03SV000 Characteristics - Specifications at 22 °C

Radial Load Rating	Radial Play	Max Temperature	65 °C
Radial Load Distance	Thrust Play ≤ 0.300 mm	Min Temperature	-10 °C
Axial Load	Magnet Type NdFeB	Max Winding Temp	120 °C
Press Fit Force - Max	Bearing Type Sleeve Bearings	Mass	7.4 grams

Gearbox Options 10 mm Diameter Exact Ratio Metal Planetary Gearbox  
 Encoder Options Integrated 3 to 24 Volt 10 mm diameter 2 channel 10 mA incremental 12 lines/track encoder  
 Options - Other 2.4 Volt to 6 Volt windings. Wire leads and connectors.

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Commutation Type: Manufactured under a  
 Precious Metal Certified ISO 9001:2008  
 Quality System

RoHS Compliant

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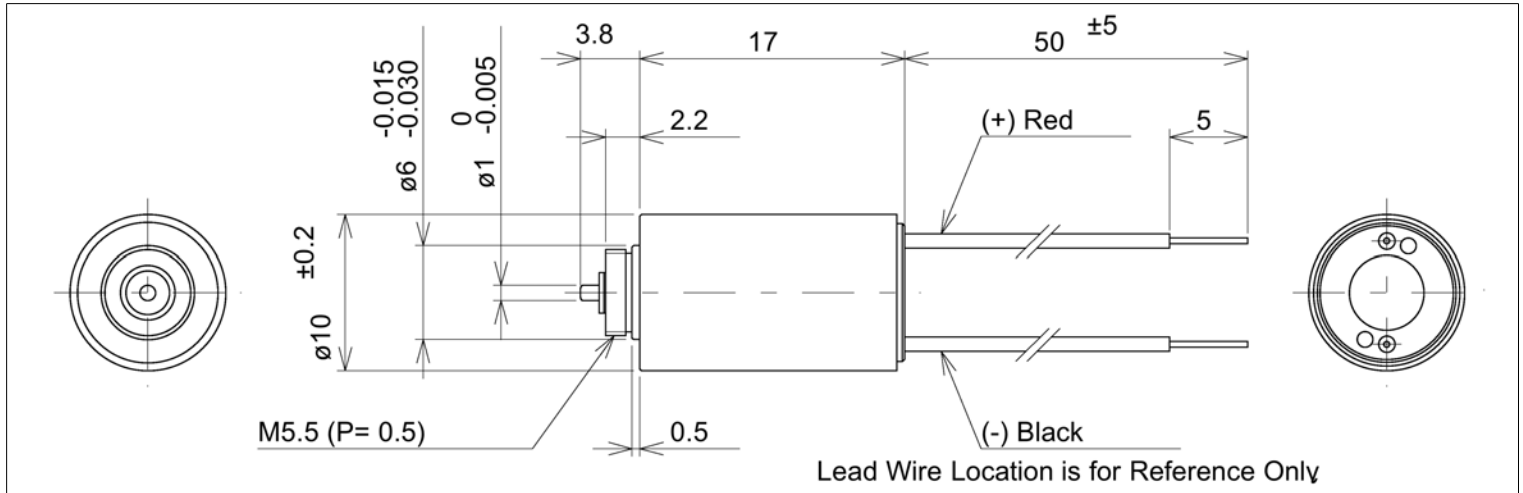
Specifications Subject to change without

# Coreless DC Motor - 13 mm Ø x 17

C10P04SV000 0.24 Watts Peak Power



Global Motion Products



Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	3.6 Volts	3.6 Volts	3.6 Volts
No-Load Speed	10,250 rpm	10,250 rpm	10,250 rpm
Stall Torque	0.9 mNm	9.0 gcm	0.13 oz-in
No-Load Current	0.013 Amps	0.013 Amps	0.013 Amps
Peak Output Power	0.24 Watts	0.24 Watts	0.24 Watts

Torque Constant	3.20 mNm/A	32.63 gcm/A	0.45 oz-in/A
Terminal Resistance	12.40 Ohms	12.40 Ohms	12.40 Ohms
Back-EMF Constant	0.34 V/krpm	0.34 V/krpm	0.34 V/krpm
Inductance	0.100 mH	0.100 mH	0.100 mH
Rotor Inertia	0.067 kg-m <sup>2</sup> x10 <sup>-7</sup>	0.067 gm cm <sup>2</sup>	0.009 x10 <sup>-4</sup> oz in sec <sup>2</sup>

Mechanical Time Constant	8.1 msec	8.1 msec	8.1 msec
Slope of Speed/Torque Curve	11,033.4 rpm/mNm	1,138.9 rpm/gcm	77,913.1 rpm/oz-in
Speed Constant	2,984 rpm/Volt	2,984 rpm/Volt	2,984 rpm/Volt
Motor Constant	0.91 mNm/√Watt	9.27 gcm/√Watt	0.13 oz-in/√Watt

Ratings below are at 60°C. At room temperature the ratings would be considerably higher.

Rated Power @	8,350 rpm	0.26 Watts	0.26 Watts	0.26 Watts
Rated Torque @	8,350 rpm	0.9 mNm	9.0 gcm	0.13 oz-in
Rated Current @	8,350 rpm	0.290 Amps	0.290 Amps	0.290 Amps
Part Number: How to Order	C10P04SV000	Characteristics - Specifications at		22 °C

Radial Load Rating	Radial Play	Max Temperature	65 °C
Radial Load Distance	Thrust Play ≤ 0.300 mm	Min Temperature	-10 °C
Axial Load	Magnet Type NdFeB	Max Winding Temp	120 °C
Press Fit Force - Max	Bearing Type Sleeve Bearings	Mass	7.4 grams
Gearbox Options	10 mm Diameter Exact Ratio Metal Planetary Gearbox		
Encoder Options	Integrated 3 to 24 Volt 10 mm diameter 2 channel 10 mA incremental 12 lines/track encoder		
Options - Other	2.4 Volt to 6 Volt windings. Wire leads and connectors.		

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Commutation Type: **Manufactured under a Certified ISO 9001:2008 Quality System**  
 Precious Metal

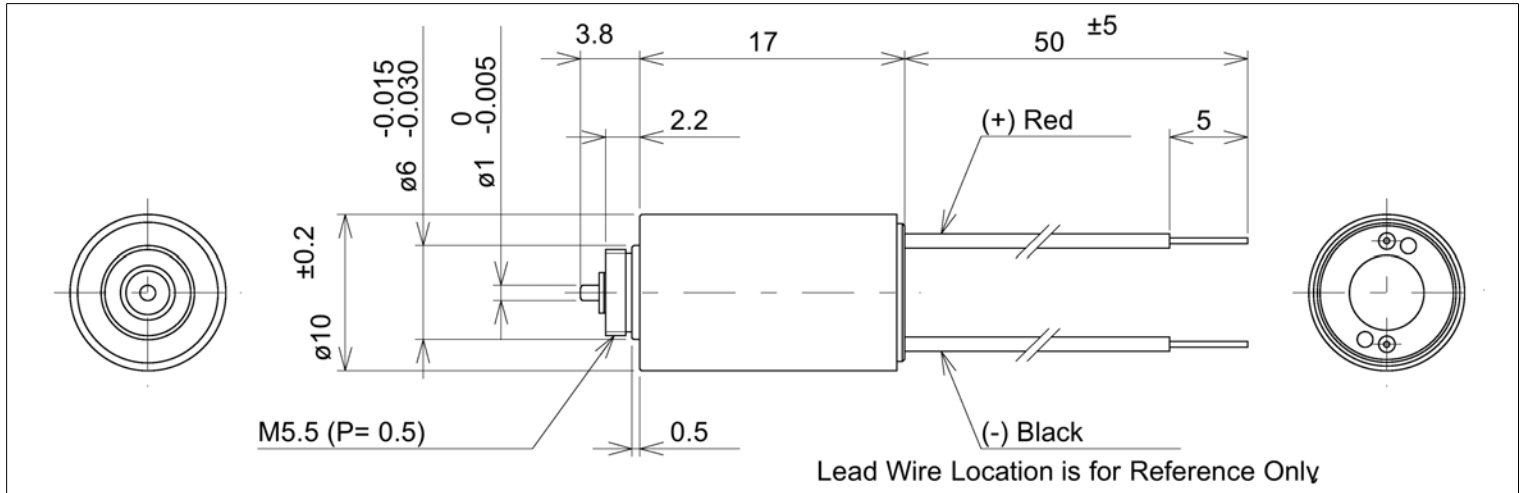
**RoHS Compliant**

# Coreless DC Motor - 10 mm Ø x 17

C10P06SV000 0.39 Watts Peak Power



Global Motion Products



Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	6.0 Volts	6.0 Volts	6.0 Volts
No-Load Speed	14,100 rpm	14,100 rpm	14,100 rpm
Stall Torque	1.1 mNm	12.0 gcm	0.16 oz-in
No-Load Current	0.020 Amps	0.020 Amps	0.020 Amps
Peak Output Power	0.39 Watts	0.39 Watts	0.39 Watts

Torque Constant	3.79 mNm/A	38.67 gcm/A	0.54 oz-in/A
Terminal Resistance	20.00 Ohms	20.00 Ohms	20.00 Ohms
Back-EMF Constant	0.40 V/krpm	0.40 V/krpm	0.40 V/krpm
Inductance	0.200 mH	0.200 mH	0.200 mH
Rotor Inertia	0.061 kg-m <sup>2</sup> x10 <sup>-7</sup>	0.061 gm cm <sup>2</sup>	0.009 x10 <sup>-4</sup> oz in sec <sup>2</sup>

Mechanical Time Constant	8.5 msec	8.5 msec	8.5 msec
Slope of Speed/Torque Curve	12,392.5 rpm/mNm	1,175.0 rpm/gcm	87,509.9 rpm/oz-in
Speed Constant	2,518 rpm/Volt	2,518 rpm/Volt	2,518 rpm/Volt
Motor Constant	0.85 mNm/√Watt	8.65 gcm/√Watt	0.12 oz-in/√Watt

Ratings below are at 60°C. At room temperature the ratings would be considerably higher.

Rated Power @ 11,500 rpm	0.44 Watts	0.44 Watts	0.44 Watts
Rated Torque @ 11,500 rpm	1.1 mNm	10.8 gcm	0.15 oz-in
Rated Current @ 11,500 rpm	0.300 Amps	0.300 Amps	0.300 Amps
Part Number: How to Order	C10P06SV000	Characteristics - Specifications at	22 °C

Radial Load Rating	Radial Play	Max Temperature	65 °C
Radial Load Distance	Thrust Play ≤ 0.300 mm	Min Temperature	-10 °C
Axial Load	Magnet Type NdFeB	Max Winding Temp	120 °C
Press Fit Force - Max	Bearing Type Sleeve Bearings	Mass	7.4 grams
Gearbox Options	10 mm Diameter Exact Ratio Metal Planetary Gearbox		
Encoder Options	Integrated 3 to 24 Volt 10 mm diameter 2 channel 10 mA incremental 12 lines/track encoder		
Options - Other	2.4 Volt to 6 Volt windings. Wire leads and connectors.		

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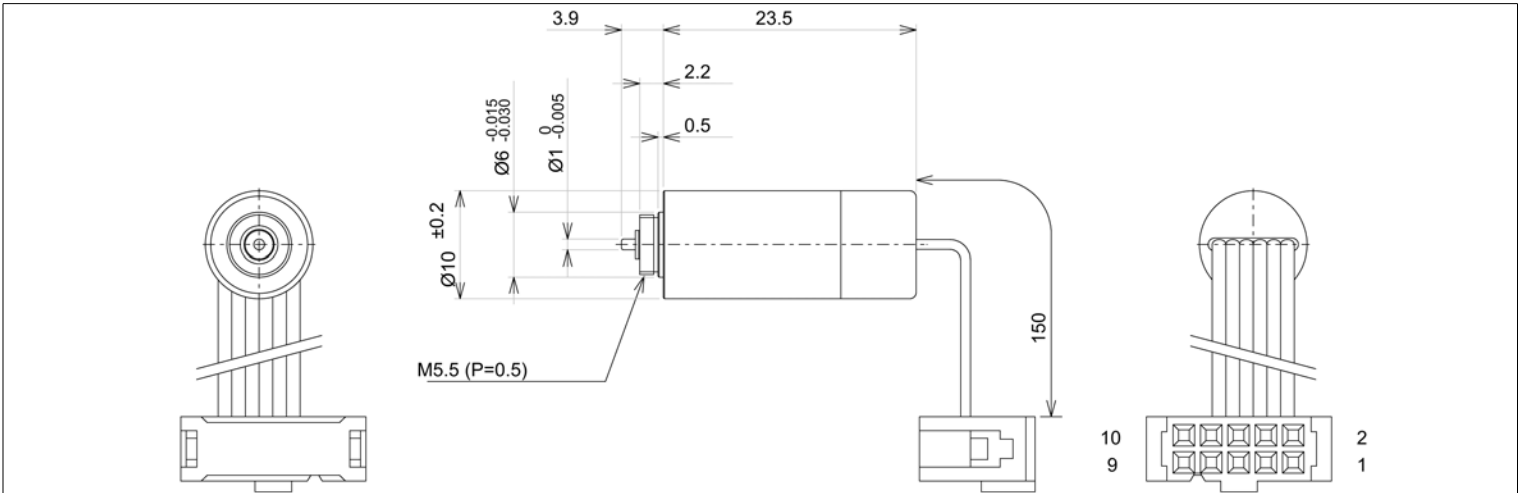
**RoHS Compliant**

A - January 2012

Specifications Subject to change without

# 10 mm Ø Encoder - 2 Channel

Series EM10 Integrated 3 to 24 Volts ≤ 10 mA



Not to Scale - Dimensions in millimeters (mm)

**Encoder Output Signals**  
 2 Channels  
 10 mm Ø  
 Integrated  
 Hall Effect Encoder

Channel A

Channel B

Supply Voltage - Max	24.00 Volt
Supply Voltage - Min	3.00 Volt
Supply Current - Max	≤ 10 mAmp
Output Current - Max	≤ 10 mAmp
Max Temp - Operating	60°C
Min Temp - Operating	-10°C
Relative Humidity - Operating	20% to 85%

Above Drawing is for encoder mounted to 10 mm diameter x 17 mm long Coreless dc motor.  
 Encoder is compatible with 10 mm diameter x 17 mm and x 25 mm long Coreless dc motors.  
 Length increase for integrated encoder is less than 6.5 mm.

Counts per Track per Rev.  
 12

Maximum Frequency Response  
 20 kHz

**Pinout Details**

Connector Pin Number	Function
1	Motor +
2	Vcc
3	Channel A
4	Channel B
5	Ground
6	Motor -

**Connector Details**

Manufacturer: 3M  
 Socket: 3448-7910LP  
 Flat Band Cable: 28 AWG

**This Encoder Is Only Available Mounted To A Global Motion Products Coreless DC Motor. It Is Not Sold Separately.**

This low current, low Voltage encoder utilized a Hall effect Integrated Circuit. It can be attached to a range of 10 mm diameter coreless dc micromotors with optional planetary gearboxes.

Magneto-resistive 3 channel encoders are available for 13, 16, and 17 mm diameter coreless dc motors. They feature complementary outputs, line drivers, and resolutions up to 512 lines per channel. 2 channel integrated optical encoders are also available for 16 mm to 24 mm diameter coreless dc motors.

Characteristics and Specifications at 22°C